SSR Requirements and R&D

- Storage capacity
  - Nominal requirement if ~3 Tb
    - CCD and IR cameras
    - Spectroscopy
  - Expanded survey requires more memory
    - Requirements depend on many variables
    - Matrix for White paper
  - Personal feeling is not to be limited by SSR
    - 300 Mbs for 5 hours is 5.4 Tb
    - Safety factor to be determined
    - Overheads for ECC are not so great

Memory Access

- Read
  - 300 Mbs transmission sets the scale
  - Some overhead so as not to be limiting
- Write
  - 20 sec between exposures
  - 500 Mbs
  - Buffering over 320 sec, compression and parallelism reduces rate
- Architecture
  - Some degree of random access desirable

Power and Mass

- Power
  - I need more understanding of this issue
  - Low power has advantages (quiet state)
    - Less strain on solar panels
    - Less of a need for battery power
    - What impact does this have on temperature control
- Mass
  - I need more understanding
    - Boards with 1000's of memory chips
    - Boxes robust against vibration
    - I don't see much room for trade-off

R&D Plan

- Focus on FLASH memories
  - Power requirement 1/10 that of DRAMs
  - Largest uncertainty is radiation tolerance
    - Very little testing for state of the art devices
- Understand trade-offs of other technologies such as DRAMs
- Work towards contributing to Conceptual Design (including procurement plan)

R&D plan

- FLASH memory evaluation board
  - Printed circuit board based upon board used for radiation exposure of rad hard registers
    - Exercise FLASH devices to understand their control and architecture
    - Understand spec's and real life requirements
  - Radiation testing
    - Look for and measure SEU rates
    - Try to understand the turn-on of failure
      - What dose?
      - What parts of the circuit are most susceptible

Schedule

- Short term (next month)
  - Understand more quantitatively
    - Initial requirements document exists with soft #'s
  - Work on hardware section of the white paper
    - The matrix for expanded science
- Near term (this fiscal year)
  - Work w/ C. Nelson on FLASH evaluation board
  - Review literature, attend conference, contact vendors
- Still this year: radiation test of FLASH